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| APPLICATION NO.        | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------|-------------|----------------------|---------------------|------------------|
| 10/066,014             | 10/26/2001  | Michael S. Foster    | 030048024US         | 2123             |
| 25096                  | 7590        | 03/31/2006           | EXAMINER            |                  |
| PERKINS COIE LLP       |             |                      | WONG, WARNER        |                  |
| PATENT-SEA             |             |                      |                     |                  |
| P.O. BOX 1247          |             |                      | ART UNIT            | PAPER NUMBER     |
| SEATTLE, WA 98111-1247 |             |                      | 2616                |                  |

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/066,014             | FOSTER ET AL.       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Warner Wong            | 2668                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-20, 22-36, 38-48 and 50-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-20, 22-36, 38-48 and 50-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-9, 13,17-19, 21-23, 27-28, 33-35, 37-39, 43, 45-47, 49-50, 51 and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Rajan (5,940,596).

**Regarding claim 1**, Rajan describes a switch/method for a routing device (fig. 3, individual clusters of input ports & secondary address translation units) comprising:

when a cache (fig. 3, local address translation unit #44) associated with each of a plurality of source ports (fig. 3, RP(0)-RP(23)) has an identification of a (destination) port associated with the address of the data, [the source port] retrieving the identification of the (destination) port from the cache (col. 2, lines 6-16, where the input port stores in its local cache a small set of address/identifier-to-port translation information);

when the cache associated with the source port does not have the identification of the (destination) port associated with the address of the data and when a table shared by multiple ports (fig. 3, secondary translation unit 52(0)-52(5)) including the source port has the identification of the (destination) port associated with the address of the data, [the source port] retrieving of the identification of the (destination) port from the table (col. 2, lines 17-33);

when the table shared by multiple ports (fig. 3, secondary translation unit 52(0)-52(5)) does not have the identification of the destination port associated with the address of the data, retrieving the identification of the destination port from a network manager (fig. 3, main translation unit #54), wherein the network manager configures multiple routing devices to forward data to at least one other routing device in response to a data communication registration request, and wherein the network manager does not participate in data forwarding as a routing device (abstract & col. 2, lines 38-54, where if a secondary address translation unit 52(0)-52(5) (a table shared by multiple ports) does not have the address translation data/port ID, the main translation unit #54 (network manager) retrieves and returns the address translation data/port ID (configures the) to the appropriate cluster (=routing device) comprising multiple ports (e.g. RP(0)-RP(3) and 52(0)) to forward the packet [i.e., the input ports/RP[x], not the main address translation unit, forward the data packets]).

**Regarding claim 17**, Rajan describes a switch/method (routing device) comprising:

- a shared collection of mappings of identifier to destination ports of the routing device (fig. 3, secondary translation unit 52(0)-52(5));

- a plurality of source ports (fig. 3, RP(0)-RP(23)), each source port having:

- a component (process) that retrieves an identification of a destination port from the cache (fig. 3, local address translation unit #44) when the cache has a mapping of an identifier associated with communication received at the source port to a destination port (col. 2, lines 6-16);

a component (process) that retrieves an identification of a destination port from the shared collection (fig. 3, secondary translation unit 52(0)-52(5)) when the cache does not have a mapping of the identifier associated with the communication received at the source port to a destination port (col. 2, lines 17-33);

when the shared collection of mappings does not have the mapping of the identifier associated with the communication received at the source port to the destination port, the process (component) retrieves the identification of the destination port from a network manager (fig. 3, main translation unit #54), wherein the network manager configures multiple routing devices to forward data to at least one other routing device in response to a data communication registration request, and wherein the network manager does not participate in data forwarding as a routing device (abstract & col. 2, lines 38-54, where if a secondary address translation unit 52(0)-52(5) (a table shared by multiple ports) does not have the address translation data/port ID, the main translation unit #54 (network manager) retrieves and returns the address translation data/port ID (configures the) to the appropriate cluster (=routing device) comprising multiple ports (e.g. RP(0)-RP(3) and 52(0)) to forward the packet [i.e., the input ports/RP[x], not the main address translation unit, forward the data packets]).

**Regarding claim 33**, Rajan describes a switch/method for retrieving an identification of a destination port for a (network) communication, the communication being received through a source port (fig. 3, RP(0)-RP(23)) and having an identifier (source address), the method comprising:

when a cache (fig. 3, local address translation unit #44) has an identification of a (destination) port associated with the identifier (source address) of the communication (data), [the source port] retrieving the identification of the (destination) port from the cache (col. 2, lines 6-16, where the input port stores in its local cache a small set of address/identifier-to-port translation information);

when the cache does not have the identification of the (destination) port associated with the identifier (source address) of the communication (data) and when a mapping shared by multiple ports including the source port (fig. 3, secondary translation unit 52(0)-52(5)) has the identification of the (destination) port associated with the identifier (address) of the communication (data), [the source port] retrieving of the identification of the (destination) port from the table (col. 2, lines 17-33);

when the mapping shared by multiple ports does not have the identification of the destination port associated with the identifier of communication, retrieving the identification of the destination port from a network manager (fig. 3, main translation unit #54), wherein the network manager configures multiple routing devices to forward communication to at least one other routing device in response to a data communication registration request, and wherein the network manager does not participate in data forwarding as a routing device (abstract & col. 2, lines 38-54, where if a secondary address translation unit 52(0)-52(5) (a table shared by multiple ports) does not have the address translation data/port ID, the main translation unit #54 (network manager) retrieves and returns the address translation data/port ID (configures the) to the appropriate cluster (=routing device) comprising multiple ports (e.g. RP(0)-RP(3) and

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52(0)) to forward the packet [i.e., the input ports/RP[x], not the main address translation unit, forward the data packets]).

**Regarding claim 45**, Rajan describes a switch/method (routing device) comprising:

means for mapping identifiers (address) to destination ports in a shared collection (fig. 3, secondary translation unit 52(0)-52(5));

means for mapping identifiers to destination ports in a cache collection for each of a plurality of ports ((col. 2, lines 6-9, where the input port stores in its local cache a small set of address/identifier-to-port translation information);

means for retrieving an identification of a destination port from the cache collection when the cache collection (fig. 3, local address translation unit #44) has a mapping of an identifier associated with a communication to a destination port (col. 2, lines 6-14);

means for retrieving an identification of a destination port from the shared collection (fig. 3, secondary translation unit 52(0)-52(5)) when the cache collection does not have a mapping of the identifier (address) associated with the communication (data) to a destination port (col. 2, lines 17-33);

means for retrieving the identification of the destination port from a network manager (fig. 3, main translation unit #54) when the shared collection of mappings does not have the mapping of the identifier associated with the communication received at the source port to the destination port, wherein the network manager configures multiple routing devices to forward communication to at least one other routing device in

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response to a data communication registration request, and wherein the network manager does not participate in data forwarding as a routing device (abstract & col. 2, lines 38-54, where if a secondary address translation unit 52(0)-52(5) (shared collection of mappings) does not have the source-destination port ID, the main translation unit #54 (network manager) retrieves and returns the such ID (configures the) to the cluster (=routing device) comprising multiple ports (e.g. RP(0)-RP(3) and 52(0)) to forward the packet [i.e., the input ports/RP[x], not the main address translation unit, forward the data packets]).

**Regarding claims 2, 9, 18, 34, 39 and 46** Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan describes the source port/component/means for storing of the identification of the (destination) port retrieved from the table (fig. 3, secondary translation unit 52(0)-52(5)) in its cache (fig. 3, local address translation unit #44) (col. 2, lines 33-35, "The local address translation unit then stores that information in its cache memory.")

**Regarding claims 3, 19, 35, 47** Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan further describes that the cache and the table contain port maps that designate one port, (col. 2, lines 6-9 and col. 2, lines 24-27, where the secondary address translation unit has more address-to-port information.)

**Regarding claim 6, 22, 38, 50** Rajan describes all limitations set forth in claims 5, 21, 37 and 49 respectively. Rajan describes the [component/means for] storing of the identification of the destination port retrieved from network manager (fig. 3, main



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address translation unit #54) in the table (fig. 3, secondary translation unit 52(0)-52(5)) (col. 2, lines 46-49).

**Regarding claims 7-8, 23, 51** Rajan describes all limitations set forth in claims 1, 17 and 45 respectively. Rajan further describes that each table (fig. 3, #52(0)-52(5)) is shared by a corresponding set of four (multiple) [source] ports (fig. 3, RP(0)-RP(23)).

**Regarding claims 13, 27, 28, 43, 55** Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan further describes that the routing device is an interconnect fabric module (cross-point switch) (fig. 1, #12 and col. 3, lines 48-54).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4, 10-12, 14-15, 20, 24-26, 29-30, 32, 36, 40-42, 48, 52-54 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajan in view of Gasbarro (2002/0141424).

**Regarding claims 4, 11, 15, 20, 25, 30, 32, 36, 41, 48, 53 and 57**, Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan fails what Gasbarro describes: the address/identifier [portion] of the (Infiniband) communication data is a virtual address/identifier (fig. 3C & 3D, #376 & 384, and paragraph 48 describing the send/receive (Infiniband) WQE messages with virtual

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addresses, "For a send operation, Virtual Address (VA) 376 identifies the starting memory location of the message data to be sent in the sending VI's local memory space."), where VA is used by InfiniBand Virtual Interfaces (VI): paragraph 4, "Using NGIO/Infiniband, a host system may communicate with one or more remote systems using Virtual Interface (VI) architecture in compliance with the 'Virtual Interface (VI) Architecture Specification, version 1.0").

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to use virtual addresses of Gasbarro in the switch/method of Rajan. The motivation being that the switch may then have the expanded capability to further support (newer) Infiniband-based networks which requires virtual addresses (Gasbarro, paragraph 22, "the present invention is applicable for use with all type of data networks,.. including newly developed computer networks using Next Generation I/O, Future I/O, InfiniBand, ..")

**Regarding claims 10, 14, 24, 29, 40 and 52** Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan fails what Gasbarro describes: the address/identifier is a portion of a Fiber Channel frame (& Fiber Channel compatible) (paragraph 22, "The present invention is applicable for use with all types of data networks.., Example of such data networks may include a local area network (LAN), .. LAN systems may include Ethernet, .. Fiber channel, ..", where it is inherent that fiber channel uses fiber channel frames.)

**Regarding claim 12, 26, 42 and 54**, Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively, including the address/identifier-to port translation table in the network switch.

Rajan fails what Gasbarro describes: the table/shared collection/mapping in the network switch (fig. 1 and 2) translates (Infiniband) frames having virtual addresses (i.e. a virtual address/identifier label/translation table) (fig. 3C & 3D, #376 & 384, and paragraph 48-49 describing the send/receive and the read/write (Infiniband) WQE messages with virtual addresses via the network switch of fig. 1 & 2).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to modify the switch of Rajan to a switch described by Gasbarro which supports virtual addresses. The motivation being that the switch may then have the expanded capability to further support (newer) Infiniband-based networks which requires virtual addresses (Gasbarro, paragraph 22, "the present invention is applicable for use with all type of data networks,.. including newly developed computer networks using Next Generation I/O, Future I/O, InfiniBand, ..", where Infiniband uses Virtual Interfaces (VI) (paragraph 4, "Using NGIO/Infiniband, a host system may communicate with one or more remote systems using Virtual Interface (VI) architecture in compliance with the 'Virtual Interface (VI) Architecture Specification, version 1.0'"), in which VI uses virtual addresses, (paragraph 48, "For a send operation, Virtual Address (VA) 376 identifies the starting memory location of the message data to be sent in the sending VI's local memory space."))

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4. **Claims 16, 31, 44, 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajan in view of McGarvey (5,777,989)

Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively.

Rajan lacks what McGarvey describes: the address/identifier is a TCP domain (i.e. IP dotted notation) address (col. 1, lines 20-32).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to explicitly mention the use of (TCP) domain address in Rajan. The motivation being that (TCP) domain addressing is standardized by RFC 1034 and is widely used, and network devices/methods using the (TCP) domain addressing may than be compatible to most existing networks. Furthermore "Conformance to RFC 1034 enables the same name space to be used with different protocol families in dissimilar networks and applications" (McGarvey, col. 1, lines 23-26).

### ***Response to Arguments***

5. Applicant's arguments filed on January 26, 2006 regarding claims 1-4,6-20,22-36,38-48 and 50-57 have been fully considered but they are not persuasive.

Regarding amended independent claims 1, 17, 33 and 45, the applicant argues on page 15, lines 1-13 that the reference of Rajan does not request information from the network manager after the second attempt (a total of three sources interrogated), wherein the network manager assigns the routing paths and ports. The examiner respectfully disagrees.

The reference of Rajan describes clusters (routing devices) each comprising I/O ports and secondary address translation units (e.g. fig. 3, RP(0)-RP(5) and 52(0) as a cluster) plus a main translation unit (=network manager) as the (external) third source interrogated if the second attempt to request the routing information from the secondary address translation unit 52 failed, and that the main translation unit includes (can assign) all the routing paths/ports. Furthermore, as stated in paragraph 30 of the detail description, the network manager can be an external (virtual) table to provide the mapping, which corresponds the main address translation unit 54 of Rajan.

On page 16, lines 21-26 & page 17, the dependent claims were argued based on dependency of missing elements from the amended claims which is overcome as described above.

Hence, claims 1-4,6-20,22-36,38-48 and 50-57 are rejectable.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Warner Wong whose telephone number is 571-272-8197. The examiner can normally be reached on 5:30AM - 2:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Warner Wong  
Examiner  
Art Unit 2616

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SUPERVISORY PATENT EXAMINER